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Availability and utilization of information and communication technology resources by undergraduate library users in Anambra State University libraries, Nigeria.

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**AVAILABILITY AND UTILIZATION OF INFORMATION AND
COMMUNICATION TECHNOLOGY RESOURCES BY
UNDERGRADUATE LIBRARY USERS IN ANAMBRA STATE
UNIVERSITY LIBRARIES, NIGERIA**

BY

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ABSTRACT

In spite of the vital role ICTs play in University libraries, it is still difficult to have access to the required resources. In this regard, it is also difficult to determine the level of availability and utilization of ICT resources in the university library of Anambra State University. This research titled "Availability and Utilization of ICT Resources by undergraduate library users is therefore necessitated by the need to create records that will serve as empirical evidence of identified level of availability and utilization of the ICT resources in the library. To investigate this, exploratory survey research design was adopted, with questionnaire as the tool used for data collection. The questionnaire was constructed and validated in both content and face validity. The reliability of 0.96 was statistically determined by the use of kurdar Richardson correlation (KRCC) formular. The sample size of the study was 378 derived from proportionate and stratified sampling techniques. 378 copies of the questionnaire were distributed to the respondents and (370) were returned valid. The research tested one hypothesis using Pearson Product Moment Correlation (PPMC) and analyzed seven research questions using descriptive statistic (frequency tables and per cent ages). The findings of the work questionnaires showed positive relationship between availability and utilization of ICT resources. Findings of the research show that some ICT resources like computer, printer, scanning, machine, photocopiers. CD Rom Internet connectivity etc were available and that they used these resources under constraints of inadequacy, lack of ICT knowledge by the students, limited work stations, poor service delivery etc. to execute class assignments, research etc. The students did not derive full satisfactory services owing to these constraints. The research recommends the expansion of ICT facilities and adequate financial base, training of students on the use of ICT components, providing reliable power, placing the internet service on regular subscription and employing experienced digital librarian to man the ICT unit of the library.

Key words: ICT UTILIZATION, ICT COMPONENTS, INFORMATION RESOURCES

INTRODUCTION

Background to the Study

One of the striking international developments in the last five decades is the emergence of new information infrastructure known as information and communication technology. Prior to the period, communication and information channels were mainly either in written (print) or oral, through the telephone, television, and radio. Today, technology has brought about different modern electronic tools that enhance effective service delivery and ensure good quality of service, Odufuwa, (2006). As many institutions are embracing the new information technology, university libraries are not left out because information is essential for general academic development of students and staff. In line with this, university libraries acquire and make available in organized order both printed and electronic information to ensure availability of information resources in such a way as to generate maximum accessibility and utilization, Adetimiri, (2007).

Availability is an essential factor in determining the worth of every library and information system because information cannot be utilized unless it is available. Availability in the context of the study is the state of having information resources provided and made accessible. For this to happen, the information must be available in the right quantity, accurate, reliable and the source having close proximity to the users. The available information is also expected to be current and relevant to the user's requirements, Uhegbu (2007). Hornby (2006) sees availability as the capability of something being obtainable within one's reach, something being free and not otherwise occupied. Microsoft Encarta Premium (2009) refers to availability as the condition of being available especially of being easily accessible or obtainable. The *Dictionary for Library and Information Science* (2004), defines availability as the capacity of an item to be seen, used or obtained by a library patron including reference materials and item in special collections for which access may be subject to certain restrictions. These definitions highlight the fact that materials can be available on certain conditions or in certain ways. Information resources can be available in open or restricted access i.e., on reservation Aina, (2004). However, users must be qualified to be allowed to have access to the available materials. They can be given materials on loan for outside usage or be given opportunity for short term usage. Onwubiko & Uzoigwe, (2004). Library and information services can also be made available through the electronic media, the Internet, C.D- Rom or the computer, (Nwana, 2008). Interlibrary loan, displays for individual usage, abstracting and indexing services and selective dissemination equally constitute other ways of making information available for

utilization. The materials which are designed for use are used to provide differing services in libraries wherever available. It follows therefore, that availability in libraries engenders the provision of services such as lending, document delivery, current awareness among others, (Aina, 2004).

With availability of information resources, university libraries become concerned with their utilization. Uhegbu (2007) argues that utilization of information is the actual putting into appropriate use of acquired information.

According to him utilization differs from person to person and from one organization to another based on their peculiarities. He identifies four basic factors which interact to enhance utilization. These are: goal, availability, process and user satisfaction. Arua and Chikezie (2006) remark that utilization of library and information materials involve effective use of the materials and services by the patrons which can be facilitated by granting access to materials on loan to users. However, information is utilized based on need, accessibility and envisaged functions, but the elements - user, goal Availability, user satisfaction must interact to enhance utilization of information. Utilization is basically aimed at satisfying informational needs, acquire education or to derive entertainment values. It may take the form of actual use of books and other information materials, browsing the Internet to retrieve or store information or receiving information services generally from information organizations either through libraries or the Internet, Aina, Mutula, Tiamiyu, (2008).

In order to enhance the pattern of information collection, processing, storage, dissemination and utilization, information and communication technology (ICT) was introduced to library and information services. This new resource (ICT), has attracted so many definitions. For instance, Information and communication technology refers to systems for producing, storing, sending and retrieving digital files. ICT is a tool used for collection, processing, storage, transmission and dissemination of information. It is the electronic means of capturing, processing, storing and disseminating information. Uhegbu, (2007), Ebijuwa, (2005) & Anyakoha, (2005). ICT is an umbrella term encompassing a number of devices and resources which include radio, television, cellular phones, computer, network hardware and software, satellite systems and various services associated with the Internet. Nwana (2008) also highlights the components of ICT to include those used to process, store, transfer information at faster speed. As an agent of social change, ICT has made impact in all spheres of life and the library is not an exception. The application of information and communication technology has made the library a new information services unit, providing electronic acquisition, electronic cataloging, electronic Online Public Access Catalogue (OPAC), electronic interlibrary loan, and electronic circulation

functions, (Okorie, 2012). Library users can now browse, download, send e-mail, make notes, all from the internet in the digital/online library. Practical or live images can be viewed on line. The advent of the computer as a product of information technology has made it easy to automate library operations thereby facilitating students and staff efforts in Nigerian universities in searching information and carrying out research in their respective fields.

A library user is a person who makes use of the library either in manual form or through the use of electronic version. He may be highly educated or not, a student or layman or a professional (Kumar, 2006). Users can also be categorized according to their profession, locality, residence, age, institution and gender. All users have information needs and they have varied interest profiles. One of the types of academic libraries that users patronize is the university library.

University libraries of different types are established to satisfy the varied user needs. Harrod (2000) defines a university library as a library or group of libraries established, maintained and administered by a university to meet the needs of students, members of the academic staff and other members of the university community to effectively carry out their administrative and executive responsibilities. Aina (2004), refers to university library as a learning centre and the heart of the intellectual system of a university. The university libraries are of different categories. There are federal, state, and private university libraries. University libraries are established by law under the umbrella of the parent institution and their funding and control equally emanate from the parent institution. The users of a university library are students, researchers, lecturers, non teaching staff and members of local community. For a university library to perform its myriad of functions its resources must include not only books and journals but also specialized materials, newspapers, magazines, manuscripts, museum objects, photographs, theses & dissertations, audio-visual materials, microforms, electronic resources etc , Aina (2004). Ifidon (1999), asserts that the major objectives of the university library are providing materials that support learning, meet the requirements of faculty specialists and post graduate students conducting research, assist the library user in his or her own personal development, develop a network of resources and meet the specialized information needs of all types of users.

University libraries are mandated to support teaching, research, and publication, conservation of knowledge, extension services and interpretation of knowledge. All these are captured in the services university libraries provide to their users. These services may include but not limited to: Instruction in the use of the library, provision of information, assistance in the location of documents, literature search, .readers' advisory services, compilation of bibliographies,

indexing and abstracting services, reservation of documents and issuing them on loan, maintenance of files containing clippings, pamphlets, Kumar (1996).

Anambra state is one of the states in South Eastern Nigeria. It derived its name from "Oma Mbala" river which was later anglicized to be known as Anambra. Prior to its creation it was part of East Central State of Nigeria. A further reorganization on 27th August, 1991 divided it into Anambra and Enugu States with its capital at Awka. Anambra has a population of 4,055,048 people (Wikipedia.org, 2010), 96 autonomous communities and 21 local government areas. The local government areas include: Aguata, Awka North, Awka South, Anambra East, Anambra West, Anaocha, Oyi, Anyamelum, Dunukofia and Ekwusigo. Others are: Idemili North, Idemili South, Ogbaru, Ihiala, Njikoka, Nnewi North, Nnewi South, Onitsha North, Onitsha South, Orumba North and Orumba South. The state is blessed with seven universities both public and private. These are: Nnamdi Azikiwe University (UNIZIK), Awka, Anambra State University, Uli, Nwafor Orizu University of Education, Nsugbe, Madonna University, Okija, Tansian University, Umunya, National Open University of Nigeria (NOUN), Abagana and Paul University, Awka.

Identifying information materials, providing access to information and encouraging utilization, of information resources to achieve the objectives of the university constitute the major roles of university libraries. This is why the examined issues of availability and utilization of ICT resources assume significant position in the provision of library and information services,

Background Information on Chukwuemeka Odumegwu Ojukwu University Library, Uli-Nigeria

In the year 2000, Anambra State Government converted the Anambra state polytechnic into a University of Science and Technology (ASUTECH). Later in 2006 it was renamed Anambra State University (ANSU) to accommodate traditional programmes. The ANSU Library Inventory Report (2000) reveals that the university library inherited the scanty resources of the polytechnic library namely one librarian, two paraprofessionals and three support staff. Other items inherited are one open hall with offices, 2 island stacks, 10 reading carrels, 40 chairs and a book stock of one thousand, five hundred and twenty (1520) volumes. These resources were improved with the take off of the university. A new university library was set up and occupied in 2005.

As a modern university library, many operational units were introduced. They are: Administration, Technical services unit, Digital/online library, Reference

service-general, Medical & Engineering library, Africana/Documents unit, Circulation unit, The institute for African development (TIFAD) and the Igbariam campus library.

There are also 28 departmental libraries in eight faculties under the supervision of the university central library administration. The library now has a manpower of 40, broken down as follows: 8 academic librarians, 6 Para-professionals and 26 support staff, ANSU Library Annual Report(2010) With the support of the Book Aid International (BAI), Education Tax Fund (ETF) and some prominent personalities the book stock came up to fifty one thousand, eight hundred and eighteen volumes (51,818) of books and 20 computers accompanied by other ICT components. There are six thousand eight hundred and seventy- two (6,872) registered undergraduate student users. The library offers 9 different services for now. These are:

- i. Reference services
- ii. Loan services/ reprographic services
- iii. Research & consultancy service
- iv. Online/internet connectivity services
- v. Current awareness/SDI services
- vi. User education
- vii. Reservation of documents
- viii. Indexing services
- ix. Provision of general and specific information services, ANSU Library Annual Report (2010)

The library is progressively growing with increasing number of stock and staff as the student population is also growing.

Statement of the problem

ICT now plays vital role in service delivery especially in university libraries. In spite of the huge role ICT plays in information services in libraries, its availability and utilization by users at Anambra State University remain a matter of conjecture. This is against the backdrop that many of the users of the Anambra State University library often complain that they are unable to use the ICT effectively in the search for knowledge. In the face of nonexistent record on availability and utilization of ICT by users of Anambra State University library, it becomes hard to say whether students actually make use of ICT as the availability of ICT in the library still remains guess work. This is why the research work by title Availability and Utilization of ICT Resources by undergraduate users of Anambra State University Library, Uli becomes quite necessary to explain this uncertainty on the availability and use of ICT by users of ANSU.

Objectives of the Study

The main objective of this research is to determine the availability and utilization of ICT resources by the users of Anambra State University Library, Uli. The specific objectives are to:

- i. Find out whether ICT resources are available for users at the Anambra State University.
- ii. Determine the type of ICT resources available in the Anambra State University Library.
- iii. Establish the reasons for the use of ICT resources by the users of Anambra State University Library.
- iv. Investigate the frequency of use of ICT resources by the users of Anambra State University Library.
- v. Identify the problems encountered by users in the process of use of ICT resources
- vi. Proffer solutions to the identified problems.

Research Questions

The following research questions are provided to guide the focus of this research.

- i. Are ICT services available at Anambra State University library?
- ii. What types of ICT resources are available at the university?
- iii. Are these resources actually used by the undergraduate students?
- iv. What do they intend to achieve by using the ICT resources?
- v. What are the purposes for which ICT resources are utilized?
- vi. To what extent do the users make use of the ICT resources?
- vii. What are the various factors militating against use of ICT
- viii. How can the problems be minimized?

Hypothesis

There is no significant relationship between the availability of ICT resources and their utilization by the undergraduate users of Anambra State University library.

Scope of the Study

The research is limited to ICT resources in Anambra State University Library, Uli. It has concentrated on all the registered undergraduate users of the library, their level of study, age, gender, or status notwithstanding. The research emphasis is on establishing the availability and use of ICT by all the users of ANSU Library .It excludes the general functioning of the library as a system.

Significance of the Study

This research is intended to provide a proper understanding of the role of ICT facilities in Nigerian universities. It also provides a clear picture of students' use of information technology in academic libraries and will encourage new directions for research on electronic information literacy in Nigerian universities. It is hoped that the findings of this study will assist administrators of the university libraries in developing a more complete understanding of students' use of ICT resources in their libraries. For instance this study may serve as an evaluation of the electronic resources currently utilized by Nigerian university libraries. These libraries need to know if their services are meeting students' needs. Students will benefit in some ways. The findings of the study may be used to improve services for utmost benefit of the students.

Literature Review

Availability: An Analysis

Dictionary for Library and Information Science (2004) and the *Online Dictionary of Library and Information Science* (ODLIS, 2010) define availability as the capacity of an item to be seen, used or obtained by a library patron, including reference materials and items in special collections for which access may be subject to certain restrictions. The Wikipedia.com (2010) asserts that for any information system to serve its purpose, the information must be available when it is needed. It argues that availability goes with security control, communication and channels. Uhegbu (2007) asserts that it is not only the provision of information that is necessary (ie availability), but also its accessibility. He argues that information is meaningless if it is not available to those who want to use it and reinstates that effective utilization requires its availability in the right quantity and time and accuracy of its source. (Aina (2004) discusses different ways library materials can be made available to users. They are: lending, inter-library loan (ILL) and document delivery service, reservation service, current awareness (CAS), exhibition and displays, library publications, personal assistance, selective dissemination of information (SDI), and translation services.

But Anaehobi (2006) conducted an empirical survey on Availability of ICT facilities in Academic Libraries in Anambra State. The study surveyed ICT components and other tools availability in eight academic libraries in Anambra State. Questionnaires accompanied with visits to the institutions were used to collect data. Findings indicate that there is ICT awareness in all the institutions but that the available facilities are inadequate; only one institution was found to have reasonable number of facilities but no academic library in Anambra State

can be said to be completely ICT compliant, he reveals.

Utilisation: General Overview

According to Dictionary for Library and Information Science (2004), utilization is the number of times a bibliographic item is used by library patrons during a given period of time. Uhegbu (2007) succinctly describes information utilization as the actual putting into approximate use of acquired information and asserts that it differs from person to person and from one corporate organization to the other according to their information needs and other socio-economic imperatives. He views utilization within the context of need, accessibility and function performed. He concludes that the essence of utilization of information is its ability to satisfy the needs of the information user. The Longman Dictionary of Contemporary English (2005) defines utilization as to use of something for a particular purpose; to exploit. The act of putting something to use is therefore utilization. Narayana (1991) analyses usage of information and information sources in terms of needs, wants, demand, uses and requirements. He maintains that utilization studies embody measuring the actual benefits of the services of information facilities accruing to the individual and society.

Uppermost in the minds of university librarians is the utilization of library services and resources. This is in realization of the role the library plays as an educational ingredient. According to Braimoh, Jegede, and Chazinwa (1997), the consequences of the students inability to use the library will include among other things a serious debasement of the quality of university education which may consequently have a negative effect on the job performance of the university products. Library and information centre's usually define the patterns of utilization to guide usage. The extent of utilization is used to determine the quality of service.

There are times of intense utilization of information resources as well as period of low usage. Akande (2003) and Busayo (2005) found out in their studies that more materials are utilized when examination is approaching while few people utilize materials at ordinary times. Omoniyi (2002), after investigating the utilization of library resources by adult educated elites in Ilorin found out that Nigerians seldomly use the library after graduation from educational institutions. Ottong and Ntu (2010) examine the extent of information and knowledge organized by the university library, the extent of utilization by the lecturers and the factors affecting proper information and knowledge utilization. Also, Okorie (2010) examined the extent of utilization of electronic information resources under the topic: Utilization of Automated Electronic Information services: A case Study of the University of Agriculture Library, Abeokuta. Eight hundred copies of a two

part questionnaire were administered to the users at the university library, Abeokuta. Six hundred and fifty responses were returned valid. The results revealed that non-final year students prefer to use QPAC whereas the final year postgraduate students and academic staff regularly use CD-ROM databases such as TEEAL, MEDLINE, CAB Abstracts, INFOTRAC.

ICT resources: Conceptual Explanation

Akintunde (2004) sees ICT as a terminology which has overtaken information technology (IT) because of its appropriateness and relevance. It was known as information technology in the 80s and the 90s but since this decade the term information and communication technology has taken over. ICT is a range of technologies for gathering, storing, retrieving, processing, analyzing and transmitting information. It is an instrument that has provided opportunity for undertaking information related tasks much more efficiently. ICT is an omnibus term that includes computer and telecommunication technology which is used in handling acquiring, processing, storing and disseminating information. Radio, television, photocopying and duplicating machines constitute information technology components, (Odunfuwa,2006,Unagha,2006). Qiang (2003) and Anaeme (2006) are of the view that the concept of information and communication technology amounts to the application of communication technology consisting of hardware, software, network and media for collection, storage, processing, transmission and presentation of information via voice, data, text or images. Basically ICT does four basic things in information services delivery chain, namely collection (Acquisition), processing (preparation), storing (preservation) and dissemination.

Thioune (2003) categorises ICT resources into two main groups - the traditional ICTs and new ICTs. Traditional ICTs include radio, television, fixed telephone lines and facsimile machines. The new ICTs are the modern computers and applications accessible through computers. These are: E-mail, Internet, CD Rom, flash drive among others. ICT is the convergence of interests between electronics, computing and telecommunications, all of which lead to the rapid development of microelectronics. It is like a living organism with growing qualities which changes from time to time and from place to place depending on the prevailing cultural, socio-economic and political circumstances. ICT resources include; satellites, microwaves, modems, digital papers, internet and e-mail, radio, television, telephone, coaxial cable, fibre-optic cables, Wireless Application Protocol (WAP), Ohakwe and Okwuanaso, (2005); Nwana, (2006). Anaehobi (2007) makes an elaborate presentation of all ICT resources and facilities as available in academic libraries in Anambra state. These are computers, UPS, scanner, printer, antenna mast, VSAT main server, VSAT proxy server, satellite

dish, internet connectivity, websites, LAN, MAN, WAN, E-mail, CD-Rom, telephone landline, telephone network, cyber cafe. All these are clear manifestations of the central meaning of ICT as the electronic components integrated for the purpose of gathering, storing, processing, analyzing, and disseminating information.

Types and uses of ICT resources

According to Anaehobi (2007:57) advances in information and communication technologies, electronic information in the form of electronic books, electronic journals and the Internet have launched the world into an information age. He argues that no institution can now rely only on traditional printed information resources to perform effectively and efficiently. He lists the uses of ICT as

- i. Providing tools for managing the avalanche of information generated by modern society.
- ii. Provision of speedy and easy access to information
- iii. Provision of remote access to users, and the
- iv. Provision of unlimited and flexible information from different sources.

Case & King (2003), and Ozoemelem (2009) variously describe the various uses of the ICTas: Generation and processing of information, Reliable record keeping or storage of information, Ensuring safety of stored information, Speedy utilization or dissemination of information, Simplifying work and reducing costs in modern business and Facilitating the process of quality decision making.

Nwosu (2000) captures the indispensability of information and communication technologies in government and businesses when he says that ICT forms strategic weapon for gaining competitive advantage, improving productivity, promoting effective and efficient performance. Anigbolu and Ejitagha (2008) show the role of ICT in library operations, its trend and status in Nigeria, the accessibility, availability and usage in libraries. According to them ICT pervades every aspect of life, work, learning, leisure, teaching and learning. Nwana, (2008) outlines the following as the types and components of ICT: Computer system, Communication system-telecommunication, telephone, satellites, telex, facsimile, internet, e-mail, videotext etc., Reprographic system-micrographics electronic copiers, word processing, Microwaves system - radio, television etc.

Ikpe and Ibekwe (2006) compare the use of old ICT equipment with that of modern types of ICT while outlining them. Actually, ICT components exist in different forms and sizes with different uses. They are integrated and manipulated to yield differing information services as they are now indispensable part of the nation's information infrastructure. Anaehobi(2007) after surveying eight academic libraries in Anambra State with questionnaires and personal visits

identifies nineteen different types of ICT facilities being used by students. He also highlights six basic services provided by these ICT facilities but conclusively reports the pitiable state of ICT facilities in these academic libraries.

Role of ICT resources

ICT offers the potential to assist in meeting the university's strategic objectives. It can support the quality of teaching and research and improve its competitiveness, Owston (2005) observes that the web frees teaching and learning from the physical boundaries of classroom and time restraints of class schedules. Traditional lectures and demonstrations become web based multimedia learning experiences for students.

Provision of reliable information is another major reasons for using ICT resources. Adogbeji (2006) states that if research must be reliable, it must be based on reliable information and the easy access to this information which is highly required by scholars. The Internet and other ICT resources are providing these services. Olatokun's (2007) investigation on the availability, accessibility and use of ICT among Nigerian women academics reveals that the use of ICT facilities such as computers, printers, Internet, individual websites, photocopiers, telephone and mobile phones were relatively high among the women respondent compared to the use of scanners, facsimile, video conferencing, and teleconferencing. The research found out too that ICT resources were solely used for statistical analysis, word processing, Internet browsing and searching for information, electronic communication and preparations of course materials. Gbaje (2007) posits that research has led to proliferation of Internet access both within and outside Nigerian university campus. Such Internet access has made it possible for libraries to provide on-line information services to users, access to electronic theses and dissertation and subscribed online data bases.

ICT is used by undergraduates for assignment, class work, project work, seminar and term paper writing, (Adetimirin, 2007) Anaeme (2006) discusses the general application and uses of ICT in various activities of library work. He states that ICT facilitates reference services, current awareness and selective dissemination of information services in libraries, cataloguing and classification and collection development and this is why library workers embrace the ICT. Akintunde (2004) itemizes the use of ICT in libraries as:

- i. Management of library administration
- ii. Processing of library materials
- iii. Developing online resources
- iv. Accessing online resources
- v. Developing offline resources

- vi. Accessing offline resources
- vii. Providing services to clients.

ICT facilities have created tremendous impact on information and business services. Library and information based organisations have embraced the use and application ICT facilities in processing, storage, retrieval and transfer of information for effective service delivery. Ilorah, Nwofor and Onwudinjo (2007) conducted an empirical survey on the place of University Libraries in e-Learning in Universities in Anambra State: A case Study of Nnamdi Azikiwe University, Awka, Anambra State University, Uli, and Madonna University, Okija. They distributed and used thirty-seven questionnaires in the three universities mentioned above. Among other findings they identified the following reasons for use of ICT resources: improving quality of research, improving quality of teaching, enhancing curriculum development and innovation, improving and facilitating library service delivery, enhancing records management, operational effectiveness, minimizing cost of service delivery and boosting capacity utilization.

Library user: Its meaning and characteristics

Aina (2004) states that the term **user** is all embracing and that it is used broadly to include all those who avail themselves of the services offered by a library. He outlines various terms by which the user is called such as patron, client, reader, customer, and consumer. Irrespective of whatever name they are called they all apply to those seeking the services of a library. Kumar (2006) also lists them as client, patron, reader, user, customer, inquirer, member etc. but he prefers to use the term user. He categorises them as specialists, a student, a housewife, an average layman, a business man, a teacher etc .

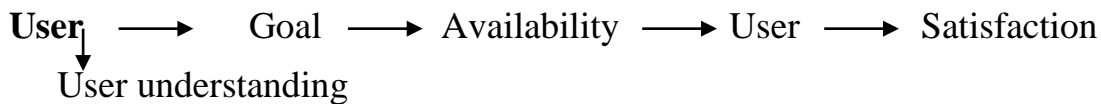
Theoretical Framework

This study has adopted theoretical basis of Neelemeghan (1981) and Itoga (1992) theory of information provision and capacity utilization. The information provision and capacity utilization theory maintains that access to information is not equal to all classes of users and the capacity of effective use of it equally differs among individuals according to their profession, occupation, gender, age, culture, education, social status, marital situation and residence. There are differences in the level of information utilization among users when the information is available on time, relevant to their information need, accessible in the format and language understandable to the user.

There are three basic understanding in the context of information utilization identified by Itoga (1992). These are:

- i. Perceptual understanding in which the information seeker's demand is

- based on his behaviour, gesture, words and writing etc.
- ii. Normative or objective understanding where the provision and utilization of information is viewed from the seekers objectives and purpose.
 - iii. Contextual or subjective understanding in which information utilization is a function of subjective meaning given to it. In essence, the availability and accessibility of information in any medium must meet the complex behaviour needs of the people be it economic, social, political etc and also the essence of the principle of information utilization is founded upon its ability to satisfy the needs of seekers. On the other hand, the principle of use is based on four broad premises- goal, availability, process and user satisfaction. Uhegbu (2007) views that these elements of information utilization interact in the following sequence to enhance utilization of information:



A proper understanding of these elements of information utilization will provide fuller meaning to the theoretical construct of information utilization. The first principle in information utilization is user understanding of himself. It is necessary to appreciate how the user sees himself in the context of his job, responsibilities, age, gender, literacy level and other personal characteristics or how he views himself within his functional environment. All this will determine how useful the information will be to the user.

Summary/Conclusion

The meanings, types, and uses of ICT resources were reviewed and discussed with the conceptual definitions of, provision availability, utilization and uses of ICT resources. Various information based materials were consulted in the process of review. These are Journals, Textbooks and Websites.

Central to the issues reviewed is the fact that ICT is the greatest innovation in the world of information and education and it has elevated the role and importance of libraries in universities particularly in the areas of information availability, utilization, administrative and academic work. In the light of this, the Neelerneghan (1981) and Itoga (1992) theoretical construct was adopted to form the basis for examining the unsatisfactory state of ICT facilities and services in the University Library as revealed by students' reports. Paucity of literature and data on ICT services and utilization in the library have made it impossible to determine the level of efficiency of service and volume of output being generated by the service unit. This research therefore intends to ascertain among other issues the availability, accessibility, and usability of ICT resources in the State University Library (COOU) at various campuses.

Research Methodology

Research Design

Every good research must be designed, organized and conducted in a defined pattern. The researcher therefore adopted a survey research design. This involves a systematic and comprehensive collection of information about the opinions, attitudes, feelings and behaviours of the wider population of undergraduate students. It is an exploratory survey method in nature because the population of the students is relatively large and has examined availability and utilization of ICT by all the undergraduate users.

Population of the Study

The population of the study is six thousand eight hundred and seventy two (6872) registered users of Chukwuemeka Odumegwu Ojukwu University Library. This is made up of registered undergraduate students in the now extended eight faculties, namely: Agriculture, Arts & Social Science, Education, Engineering/Evm, Law, Management Science, Medical Science, and Natural Science/Physical Science.

The extended eight faculties are made up of thirty departments. Table 1 shows the population of users and their respective faculties.

Sample Size and Sampling Technique

The sample size of this study was three hundred and seven eight (378) registered undergraduate students. This sample was derived from the application of Yamane's (1969) statistical formula for deriving sample size from finite population. The formula is expressed and worked out as follows;

$$n = \frac{N}{1 + N(e)^2}$$

Where n = sample size required

N= Total population

e = level of significance of tolerable error which is 0.05

I is constant;

Hence,

$$\begin{aligned} & \frac{6,872}{1 + 6872 \times 0.0025} = \frac{6872}{18.18} \\ & = 377.997 \quad -378 \end{aligned}$$

To select each respondent from this sample size of 378, the stratified/proportionate sampling method shall be applied.

With this sampling technique the compositions (different subsets) in different faculties shall be represented using the statistical formula for determining multistage sampling. The formula is

$$n = \frac{X}{N} \times \frac{P}{1}$$

Where n = figure to be derived from each subset

N = Total population (6872)

X = the sample size derived=378

P=population in each facultyl = **Constant**,

Based on this formular, see table 2 for figures derived from each faculty.

Based on this formular , Faculty of Agriculture which has 456 registered users, only 25 are selected .Arts and Social Sciences has 970 registered users and 53 users are chosen . Education has 285 and 16 are selected. Engineering/EVM registered 1366 and 75 are selected .Others are Law, 885 and 49 are chosen, Management Sciences has 1355 and 74 selected; Medical Sciences had 86 and 5 are chosen; Natural Sciences have 1469 registered users and 81 are selected. To pick actual respondents from each of the faculties, simple random sampling technique was adopted .This gave every user in that faculty equal chance of being chosen. See table 3.2 for details. There was interaction between the researcher and the user in each case in order to ascertain the faculty the user belonged before giving him or her a questionnaire.

Instrument for data collection

The instrument used for collection of data was structured questionnaire titled Questionnaire on the Availability and Utilization of ICT by Users of ANSU Library (QAUI). The questionnaire is divided into two sections, A and B. Section A was designed to elicit personal information about the respondents and Section B is made of modified responses of 54 items designed to elicit answers from seven research questions to be used in the study. The responses were structured. The questions are framed in simple and easy to understand English Language. It covers all aspects of the research objectives and hypothesis.

Validation of the Instrument

To ensure the validity of this instrument copies were given to some experts in Library and Information Science to review. They were able to establish the extent of coverage, relevance of items, adequacy of content, appropriateness of language and

content of the work. The comments and criticisms of the experts were used to improve the work and grant it both content and face validity.

Reliability of the Instrument

In order to establish the reliability of the instrument, (questionnaire), a pilot study was conducted using sixty (60) undergraduate library users of Madonna University, Okija. To measure the interval consistency through a test - retest device, samples of questions were administered to the groups. The responses were collected and scored. After two weeks interval the same groups of respondents were given the same questions to answer. Their responses were again collected and scored like the previous ones using the Kuder Richardson Correlation Coefficient ®. The results of the two were found to be consistent with one another. With the correlation co-efficient ® of 0.96 the test was accepted to be reliable.

Procedure for data collection

The researcher visited the appropriate sections of the library and distributed the questionnaires after due interactions with the users. After a thirty minute interval he personally went round and collected the questionnaires from the users. The questionnaire distribution and collection lasted for two weeks. Care was taken to avoid double responses or more questionnaires than allotted going to a particular faculty.

Method of data analysis

The researcher adopted the use of statistical tableland simple percentages to present the responses from the questionnaire. Themes were drawn from each research questionnaire.

The use of Pearson Product Moment Con-elation Coefficient (PPMC) is viewed to be most appropriate, Uhegbu (2009: 186) being statistical tool for testing relationships between variables or correlation in research (). The formular for computing PPMC is as follows:

$$r = \frac{N\sum Xy - \sum X \sum y}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum y^2 - (\sum y)^2]}}$$

In calculating the correlation coefficient r, the raw score method was adopted as contingency tables which were drawn to average the responses from two variables were denoted by X and Y. The summations, square of summations and product of summations are stated thus: $\sum X$, $\sum y$, $\sum y^2$, $\sum X^2$ and summation $\sum Xy$ were calculated accordingly and where the calculated ratio r is greater than the critical value (reading from the table of Pearson Product Moment correlation), it is said to have positive

correlation, the null hypothesis will be rejected, but if otherwise, there is no positive correlation which implies that the null hypothesis will be accepted.

Analysis and Presentation of Findings

The data analysed were derived from the copies of the questionnaire distributed to undergraduate students of Chukwuemeka Odumegwu Ojukwu University. A total of 378 copies of the questionnaire were distributed to the respondents as follows:

Agriculture (25), Arts and Social Sciences (53), Education (16), Engineering /EVM (75), Law (49), Management Science (74), Medical Science (5) and Natural Science (18). Out of the 378 copies, 370 representing 97.9% were properly filled and returned while 8 (2.2%) were not returned (see table 3).

The responses indicate that 26(7.0%) of the respondents were in Agriculture, 53(14.3%) were in Arts & Social Sciences, 17 or 4.3% in Education and 71 or (19.2%) in Engineering/Evm. 51 respondents or (13.8%) were from Law, 71 or (17.2%) were from Management Sciences while 5 or (1.5%) came from Medical Sciences and 76 or (20.5%) were in Natural Sciences. From table 3 there are more respondents from the Faculty of Natural Sciences, which is 76 or (20.5%). This may be because of the many departments in the Faculty. On the other hand, the smallest number 5 or (1.3%) came from the Faculty of Basic Medical Sciences which may be because of few number of students in the Department.

Table 4 shows the gender of the respondents. 212 (57.3%) were males while 158(42.4%) were females.

This shows that male respondents were more than the female respondents in the University.

Table 5 shows the level of study of respondents. Majority of the respondents, 133(35.90%) were in 100 levels of their studies. Another large number 94 representing 25.4% were in 200 level. Others were 81(21.9%) in 300 level, and 15(4.0%) in 500 level. The large number of respondents came from 100 levels.

This may be because students who fail at 100 levels do not progress to 200 level which may lead to more number of students in 100 level.

Research Question: Are ICT services available at Anambra State University Library?

The types of ICT service available at the library are shown in Table 4.4. From their responses 150 (43.7%) indicated the availability of communication services such as e-mail, internet connectivity and free wireless network services in and around the library; 83(24.2%) reported having electronic research services via Internet,

51(14.9%) indicated the availability of services through capturing technology such as Scanning, Printing and Photocopying Services; 43(12.5%) noted that processing and retrieval of information services were available in the library, 16 or 4.7% attested receiving relevant instructions on the use and application of ICT resources.

The general indication from the table is that the Library predominantly provides services in the area of wireless Internet connection and e-mail services.

Research Question 2: What Types of ICT Resources are available at the University Library?

The types of ICT resources available for use at the University Library are shown on table 4.5 149(43.7%) indicated that computer or processing technology were available, 83 or 24.3% revealed that storage technology i.e. CD Rom, CPU, Flash drive and modem were also available, 51(15.0%) state that communication technology namely, Internet connectivity, e-mail services, free wireless network, antenna masts were available in the library system, 42(12.3%) attested to having capturing technology such as scanners., printers, photocopies, and digital camera in the library while 16(4.7%) indicated that display technology such as electronic

board and subscribed databank were available in the Anambra State University Library. From the table below there is an indication that computers as processing components are in greater number than other components.

Research Question 3: Are these Resources actually Utilized by the Undergraduate Students?

The ICT resources actually utilized by respondents are shown on Table 4.6. 156 or 42.2% identified the computer as the major ICT resource utilized, 85 or 23.0% indicated that they utilized Internet connectivity, free wireless network in connection to the antenna and satellite dish, 63 or 17.0% stated that they utilized the capturing technology such as scanners, printers and photocopies while 49(13.2%) indicated that they utilized CD-Rom, modem, CPU for information services. The utilization of electronic display technology attracted only 17(4.6%).

Research Question 4: What are the Purposes For Which ICT Resources are Utilized?

Table 4.7 shows the purposes for which the respondents used the ICT resources. 152(41.1%) predominantly utilized the resources for updating their knowledge and executing class assignments, 103(27.8%) patronized the ICT Library for undertaking research work, writing term papers and seminar papers, 9(24.6%) used the ICT resources for copying, Scanning and printing documents, 14(3.8%) went for communication purpose while 10(2.7%) essentially were for downloading, uploading, or retrieval of information.

Research Question 5: To what extent do the users make use of the ICT resources?

From table 4.8 of frequency of utilization of ICT resources, their responses showed that 163(44.0%) used the resources occasionally, 81(21.9%) used them regularly while on campus, 71(19.2%) did not use the resources at all, 52 (14.1) rarely used the resources while 3(0.8%) did not indicate any frequency of usage. The responses indicate that greater percentage use the facilities occasionally. This may be owing to poor service delivery and inadequate facilities.

Research Question 6: What are the Various Factors Militating against the Use of ICT Resources in the Library?

Table 10 shows that majority of the respondents, 314 (20%) had the opinion that inadequate ICT resources constituted the major problem confronting the utilization of the ICT resources, 283(18%) complained of limited work stations or operational space which posed some limitations to the use of the resources. 251 (15.9%) pointed out the sluggish responses of the communication instrument (Internet connection) as another major problem as it encourages frustration, 223(14.2%) marked non-subscription or interrupted subscription to e- services as another, 186(11.9%) related their problem to frequent power failure, 165(10.5%) expressed their problem as emanating from poor management of the facilities while 145(9.4%) attributed the problem to lack of adequate implication is that effective and efficient utilization of ICT resources is hindered by the above identified problems.

Research Question 7: How can the Problems be Minimized?

On strategies for minimizing the identified problem, the respondents were asked to comment. Below is a list of the recommendations on how to tackle the problems facing the users of ICT resources?

- i. Expansion of the operational space or setting up of a new ICT building
- ii. Improved funding to improve quality of service
- iii. Increasing the number of available ICT resources.
- iv. Providing a suitable operational standby generator
- v. Providing high capacity internet service.
- vi. Providing suitable education to students on use of ICT resources
- vii. Regular subscription to major data banks and e-journals.

Test of Hypothesis

The study tested one hypothesis using Pearson Product Moment Correlation Coefficient (PPMC)

HO: There is no Significant Relationship Between the Availability of ICT Resources and Their Utilization by the Undergraduate Users of Chukwuemeka Odumegwu Ojukwu.

From the calculation (see Appendix III) the correlation coefficient r is 0.97 (see Appendix V , Table of values). At the PPMC table of distribution, the critical value at degree of freedom of $(N-2)$ and 0.05 level of significance is 0.878. Since the calculated value of 0.97 is greater than the tabulated of 0.879(i.e. $0.990 > 0.878$) it has correlation, and the null hypothesis was rejected. Therefore, there is significant relationship between the level of availability of ICT resources and the volume of utilization by the undergraduate users of Chukwuemeka Odumegwu Ojukwu University. In other words the level of ICT resources available determines the level of utilization by the undergraduate library users.

Findings of the Research

The researcher made the following findings:

1. Availability of different types of ICT resources such as computers, printers, scanning machines, photocopiers, CD-Rom, electronic board, internet connective, and free wireless connection was established.
2. Utilization of some of the available ICT resources at different levels existed. The computers, copiers, printers and Internet services attracted more usage.
3. The purposes for using these resources are basically to effect communication, execute class assignments, conduct research, write semester papers and seminar papers, retrieve information, copy or scan documents.
4. The greater percentage of users visit the ICT library occasionally.
5. The major problems facing them is lack of skill and knowledge about ICT operations and uses, poor power supply and inadequate number of ICT resources.
6. In the course of testing the hypothesis a positive significant relationship was discovered to exist between the Availability and Utilization of ICT resources in the university library.

Discussion of Findings,

Results on table 4.4 show that the major ICT resources such as computers, printers, scanners, CD-Rom, photocopiers, modem, Internet connectivity, free wireless network, subscribed databank ,e-mail service linkage ,antenna & satellite dish receptacle are available in the Chukwuemeka Odumegwu Ojukwu University Library. All the components except one have positive result (mean value and percentage). The available resources may be as a result of the NUC's strict guideline on the provision of information and communication technology resources in

Nigerian University Libraries. This finding is in consonance with Anaehobi's (2007) finding on availability of ICT facilities in academic library in Anambra State. However Anaehobi highlights the pitiable state of ICT resources and their limited number which discourages effective utilization. The utilization of ICT resources at the Chukwuemeka Odumegwu Ojukwu University library is at variance with the findings of Okorie (2010) which reveals that undergraduate students prefer to use OP AC. From table 4.5 on utilization, it is gathered that over 80% utilize computers mainly for the under mentioned purposes other than the OPAC, CD Rom or Data Warehousing. Other resources which the table reveals that the users at ANSU rely on are the photocopying machines, printers, internet connectivity with personal computers and the use of the University ICT centres. The non-utilization of other components could be attributed to lack of awareness by the students and poor performance of some of the ICT resources. Findings show that students utilize the ICT resources for communication purposes, research work/terminal projects, class assignments, writing term papers, information retrieval, documents copying/scanning and for general browsing purposes. This is reflected in the research findings of Adetimiri (2007) which also states that ICT resources in universities are used for class assignment, writing project work, seminar and term paper . The partial use of ICT resources for updating knowledge could be attributed to students' attitude of using libraries mainly for examination purposes, as argued by Akande (2003) and Busayo (2005). The greater percentages who utilize these resources use the library occasionally. This is also sequel to the preference for availing themselves of the library services for examination purposes.

The results show that 21.9% in table 4.8 received fairly satisfactory service on regular utilization while only 44% merely utilized the services occasionally. One of the findings of this study is that greater percentages of the student users do not have adequate knowledge for ICT operations thereby increasing the frustration rate in the process of use. The casual and fresh library users are mostly affected by this problem as revealed by Ifidon & Ifidon, (2008) when they highlighted that the casual and fresh students lack the knowledge to use the library resources.

In addition to the above is the problem of inadequate number of ICT resources compared to the population of users. The work stations are very limited in number and the users often scramble for positions. The operational space for the ICT components is very limited and many users are always denied services Anaehobi, (2006). The problem of power is almost a general problem in Nigeria. From the table of analysis students still identified it as one of the major problems as the power supply is always fluctuating. There is often no trained manpower to operate the standby power plant. Student users also identified the poor performance of the internet connection and browsing. This is as result of the low bandwidth of the

modem used for connection to the Internet. Management and control of the ICT resources is generally poor as predicted on table 4.9. Services may have been poorly delivered owing to lack of adequate and competent manpower. Going by the finding of the hypothesis there is a significant relationship between the availability and utilization of ICT resources in the library. Where the resources are inadequate patronage will invariably be low and occasional, hence the central problem of the library.

Many strategies were accepted as being positive for minimizing the problems identified. From the list the possible solution strategies scored over 70% positive response. These are expansion of operational space or putting up a new ICT library building, increasing the number of ICT components, providing a functional standby power generator, providing high capacity internet service provider, subscribing regularly to the major databanks and e-journals on the Net and providing suitable education to undergraduate students on the use of ICT resources. All these suggestions are essentially critical for the systems development and improved service delivery.

Conclusions

In the light of research findings and discussions, the following conclusions were drawn: ICT resources are available at relatively low volumes.

Some of the ICT resources available include: Computers, Printers, Scanners, free wireless Connection, Internet connectivity, copiers, etc.

Students Utilize the ICT resources under serious problems. The utilization was not on equal basis owing to limited work stations and skill variables.

The information needs of students of Chukwuemeka Odumegwu Ojukwu University were not properly satisfied with the use of ICT resources.

There is a strong positive relationship between the level of availability and utilization of ICT resources by the undergraduate students of Chukwuemeka Odumegwu Ojukwu University.

The frequency of ICT resources Utilization is significantly related to the volume of ICT resources available for use by the students of the University.

Recommendations

Based on the findings and conclusion of this research, the following recommendations are put forward:

1. That the operational space for ICT services be expanded or an alternative building be set up for ICT services. This will help accommodate reasonable number of users.

2. As ICT services are capital intensive adequate funding is highly needed. Funding plays pervasive role. It will be utilized to minimize all other problems in the system. 30% of library's annual budget should go to ICT services.
3. There is urgent need to acquire more ICT components in reasonable number to accommodate at least 10% of total population of student users at a time.
4. The standby power generator is required to be provided with a trained plant operator/technician who can operate and identify faults as the need arises.
5. It is necessary to place the internet services on regular subscription to good data banks and e-journals for regular access by students.
6. This will be made possible by contracting a globally recognised internet service provider whose services are reliable and rapid to access.
7. Training and education of undergraduate student users on the use of ICT services is highly recommended. This will enable them appreciate and use the information resources at will and regularly.
8. Employment of experienced digital librarian and a systems analyst is necessary and recommended. The inter play of the two experts will deliver required services and restore the confidence of the users in using the ICT resource services regularly.

Table 1: Table of Registered Undergraduate Users

FACULTY	REGISTERED POPULATION
Agriculture	456
Arts & Social Sciences	970
Education	285
Engineering/EVM	1366
Law	885
Management science	1355
Medical Science	86
Natural Sciences/Physical Science	1469
Total	6872

Source: Circulation Statistical Records, ANSU Library. 2011.

Table 2: Faculties and Number of Users Selected.

S/no	Faculty	Total population	Number Selected
1	Agriculture	456	25
2	Arts & Social Science	970	53
3	Education	285	16
4	Engineering/EVM	1366	75
5	Law	885	49
6	Management Science	1355	74
7	Medical Science	86	5
8	Natural Sciences	1469	81
	Total	6872	378

Table 3: Distribution and Return rate of the Questionnaire.

Faculty of the Respondents.	Distribution	Response Rate	Percentage
1 . Agriculture	26	26	7.0
2. Art & social Science	58	53	14.3
3. Education	18	17	4.6
4. Engineering/Evm	78	71	19.2
5. Law	52	51	13.8
6. Management Science	75	71	19.2
7. Medical Science	7	5	1.4
8. Natural Science	84	76	20.5
Total	378	370	100

Table 4: Gender of Respondents.

Gender	Number of Respondents	Percentage
Male	212	57.3
Female	158	42.7
Total	570	100

Table 5: Study Level of Respondents.

Level	1	2	3	4	5	Total
Faculty						
Agriculture	10	5	6	5	-	26
Art& Soc.sci	19	12	14	8	-	53
Education	5	4	6	2	-	17
Engineering /Evm	22	17	15	7	10	71
Law	21	9	11	5	5	51
Mgt Sci	28	23	10	10	-	71
Medical Sci.	2	2	1	-	-	-5
Nat. Sci	26	22	18	10	-	76

Table 6: Availability of ICT Services

S/No	Types of ICT services available in the library	Number of Response	Percentage
1.	Printing, Scanning and [photocopying Services	51	14.9
2	Processing and retrieval of information services	43	12.5
3	Communication services e-mail, internet connectivity and free wireless network services in and around the library.	150	43.7
4	Electronic research (Research Via internet)	83	24.2
5	Relevant instructions on the use and application of ICT resources	16	4.7
	Total	343	100

Table 7: Types of ICT Resources Available

S/No	ICT Resources	No of Response	Percentage
i.	Capturing Technology: a) Scanners b) Printers c) Photocopiers d) Digital Camera	42	12.3
ii.	Storage Technology a) CD Rom b) Flash Drive c) Modern d) C.P.U (High Storage Capacity)	83	24.3
iii.	Processing Technology a) Computers	149	43.7
iv.	Communication Technology a) Internet Connectivity b) e-mail Service linkage c) Free wireless Network d) Antenna Masts/Satellite Dish	51	15.0
V	Display Technology a) Electronic Board b) Subscribe Databank	16	4.7
	Total	314	100

Table 8: Utilization of ICT Resources by the undergraduate Library Users?

S/No	ICT Resources	No of Response	Percentage
i	Capturing Technology a) Scanners b) Printers c) Photocopies d) digital Camera	63	17.0
ii	Storage Technology a) CD -Rom b) Flash drive c) C.P.U	49	13.2
iii	Processing Technology a) Computers	156	42.2
iv	Communication Technology a) Internet Connectivity b) e- mail Services c) Free wireless Network d) Antenna Masts/Sat. Dish	85	23.0
v	Display Technology a) Electronic Board b) Subscribed Databank	17	4.6
	Total	370	100

Table 9: Purpose of using ICT Resources

S/NO	Purpose	Number of responses	Percentage
i	Updating Knowledge and carrying out class assignments	152	41.1
ii	Downloading or uploading and Retrieval of information	10	2.7
iii	Undertaking research work, writing term paper and Seminar paper	103	27.8
iv	Photocopying, Scanning and Printing documents	91	24.6
v	Communication purposes (e-mail browsing and recreational purpose s	14	3.8
	Total	370	100

Table 10: Frequency of TCT Resources Utilization by Respondents

S/No	Frequency of ICT Resources Utilization.	Response	Percentage
1.	Regularly While on Campus	81	21.9
2.	Occasionally	163	44.0
3.	Rarely, based on necessity	52	14.1
4.	Does not Utilize the university ICT resources	71	19.2
5.	Not stated /can't say	3	0.8
	Total	370	100

Table 11: Factors militating against use of ICT Resources.

S/NO	Problems of Utilizing ICT resources	No of Response	Percentage
i	Lack of adequate Knowledge of ICT usage	148	9.4
ii	Inadequate ICT resources	314	20.0
iii	Frequent power failure	186	11.9
iv	Limited work stations or operational space	283	18%
v	Sluggish response of the communication instruments	251	15.9
vi	Poor management of ICT facilities	165	10.5
vii	Non -subscription or interrupted subscription to e-services by the library authority	223	14.2
	Total	1570	100

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APPENDIX I

POPULATION OF THE STUDENTS IN VARIOUS FACULTIES OF CHUKWUEMEKA ODUMEGWU OJUKWU UNIVERSITY.

FACULTY	REGISTERED POPULATION
Agriculture	456
Arts & Social Sciences	970
Education	285
Engineering/EVM	1366
Law 885	885
Management science	1355
Medical Science	86
Natural sciences	1469
Total	6872

Source: Circulation Statistical Records, ANSU Library. 2011

APPENDIX II

Testing of Reliability using Kuder- Richardson formular

Table 2 Showing scores

Test Items N=11	Item scores of Correct Answers X	Square of Correct Answer X	Proportion of Those who Answer correctly P	Proportion of Those who answer wrongly Q	pq
1	3	9	0.27	0.73	0.20
2	5	25	0.45	0.55	0.25
3	6	36	0.55	0.45	0.25
4	5	25	0.45	0.55	0.25
5	4	16	0.36	0.64	0.23
6	3	9	0.27	0.73	0.20
7	10	100	0.91	0.09	0.08
8	7	49	0.64	0.36	0.23
9	4	16	0.36	0.64	0.23
10	7	49	0.64	0.36	0.23
11	6	36	0.55	0.45	0.25
	60	370			12-40

Standard deviation

$$\begin{aligned}
 s &= \sqrt{\frac{\sum x^2}{n} - \frac{(\sum x)^2}{n^2}} \\
 &= \sqrt{\frac{370}{11} - \frac{(60)^2}{11^2}} \\
 &= \sqrt{\frac{370}{11} - \frac{3600}{121}}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{11}{10} \\
 & \frac{370 - 327.27}{10} \\
 & = \frac{42.73}{10} \\
 & = 4.27
 \end{aligned}$$

Variance = S = (4.27)

18.23

$K - Rk (1 - \Sigma pq)$

K-1 (S)

11 (1-2.40)

11-1 (18.23)

1.1 (1-0.13)

=1.1 x 0.87

= 0.96

APPENDIX: III

TEST OF HYPOTHESIS

HO: there is no significant relationship between the availability of ICT resource and their Utilization by the undergraduate users of Chukwuemeka Odumegwu Ojukwu University Library.

Level of Availability of ICT Resources at Chukwuemeka Odumegwu Ojukwu University.

1	Capturing Technology (Scanners, Printers, Copiers, etc)	5
2	Storage Technology (CD Rom, Flash derive etc)	43
3	Processing Technology (computer)	150
4	Communication Technology (Internet Connectivity, free wireless Network, email etc)	83
5	Display Technology (Subscribed databank, Electronic Board)	16
	Total	343

Types of ICT Resources Utilized by the undergraduate library users

S/NO	Type of ICT Resources Utilized	Number of Response
i	Capturing Technology (Scanners, Printers, copiers etc.)	63
ii	Storage technology (CD Rom, flash drivers, CPU etc)	49
iii	Processing Technology Computers	156
iv	Communication Technology Internet Connectivity, e-mail, free wireless Network	85
v	Display Technology Electronic Board, Subscribed databank.	17
	Total	370

Using the Pearson product Moment Correlation Coefficient (PPMC), the formular

$$\text{is: } r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 (\sum X)^2} \sqrt{N\sum Y^2 - (\sum Y)^2}}$$

Where,

N= Total number of items in the test instrument, i.e. 5

X= Level of Availability

Y= Type of ICT Resources Utilized

Computation of PPMC for the relationship of the level of Availability of ICT resources and type of ICT resources Utilized.

X	Y	X ²	Y ²	XY
150	156	22500	24,336	23400
43	49	1849	2401	2107
83	85	6889	7225	7055
51	63	2601	3969	3213
16	17	256	289	272
343	370	34,095	38,220	36047

Therefore:

$$N=5$$

$$\Sigma X=343$$

$$\Sigma Y = 370$$

$$\Sigma X^2 = 34095$$

$$\Sigma Y^2 = 38220$$

$$\Sigma XY = 36047$$

$$\frac{5 \times 36047 - 343 \times 370}{5 \times 34095 - (343)^2}$$

$$\frac{5 \times 38220 - (370)^2}{5 \times 36047 - 343 \times 370}$$

$$\frac{180236 - 126910}{(170,475 - 117,649)}$$

$$\frac{53326}{52826 \times 54200}$$

$$\frac{53326}{52826 \times 54200}$$

$$R = 2863 \ 169.200$$

$$\frac{53326}{52826 \times 54200}$$

$$R = 2863 \ 169.200$$

$$\frac{53326}{52826 \times 54200}$$

$$R = 53508.59$$

$$= 0.997$$

APPENDIX IV:
INSTRUMENT USED FOR DATA COLLECTION (QUESTIONNAIRE)
Availability and Utilization of ICT Resources Questionnaire (AUIRQ)

PART

Section A

Personal data of respondent

Please tick as appropriate

1. Level of student

1	<input type="checkbox"/>	4	<input type="checkbox"/>
2	<input type="checkbox"/>	5	<input type="checkbox"/>
3	<input type="checkbox"/>	6	<input type="checkbox"/>

2. Sex: Male ☐ Female ☐

3. Faculty:

a.	Agriculture	<input type="checkbox"/>
b.	Arts/Social Science	<input type="checkbox"/>
c.	Education	<input type="checkbox"/>
d.	Engineering/Evm	<input type="checkbox"/>
e.	Law	<input type="checkbox"/>
f.	Management Science	<input type="checkbox"/>
g.	Medical	<input type="checkbox"/>
h.	Natural Science	<input type="checkbox"/>

Section B

Please kindly tick in the appropriate box against your response and comment where necessary.

What ICT resources are available for use and service in the University Library?

1. Availability of ICT facilities/resources

The following ICT resources are available in your school library?

S/No	ICT Resources	
	Processing technology	
	Computer	
	Capturing technology	
	Scanners	
	Printers	
	Photocopies	
	Digital Camera	
	Fax Machines	
	Storage technology	
	CD Rom	
	Flash drive	
	Modem	
	C.P.U	
	Communication Technology	
	Internet connectivity	
	e- mail Service	
	Free wireless Network	
	Antenna masts/ Satellite Dish	
	Display Technology	
	Electronic Board	
	Subscribed databank	

2. Utilization of ICT resources

Which of the undermentioned ICT resources are utilized in the ICT Library?

S/No	ICT Resources	
	Processing technology	
	Computer	
	Capturing technology	
	Scanners	
	Printers	
	Photocopies	
	Digital Camera	
	Fax Machines	
	Storage technology	
	CD Rom	
	Flash drive	
	Modem	
	C.P.U	
	Communication Technology	
	Internet connectivity	
	e- mail Service	
	Free wireless Network	
	Antenna masts/ Satellite Dish	
	Display Technology	
	Electronic Board	
	Subscribed Databank	

3. Purpose of using ICT resources

What are the purposes for which the ICT resources are Utilized?

S/No	Purposes	
	Updating knowledge and carrying out class assignments.	
	Downloading and uploading Retrieval of Information.	

	Research work, Writing turn paper and seminar paper.	
	Photocopying Scanning and printing document	
	Communication (e-mail, browsing and recreational purposes.	

4. Frequency of usage of ICT resources

How often do you use ICT resources of the university library?

- a. Regularly while on campus []
- b. Occasionally []
- c. Rarely, based on necessity []
- d. Does not utilize the University ICT resources []
- e. Not Stated /can't say

5. Evaluation of volume and quality of service

What is the level of satisfaction derived from the utilization of ICT resources?

- a. Satisfactory []
- b. Fairly satisfactory []
- c. Not satisfactory []
- d. Indifferent /can't say []

6. What are the problems encountered in the process of utilization of ICT resources?

S/No	Problems	
	Lack of adequate knowledge of ICT usage	
	Inadequate ICT resources	
	Frequent power failure	
	Limited work stations or operational space	
	Sluggish response of the communication instruments	
	Poor management of ICT facilities	
	Non-subscription or interrupted subscription to e-services by the library authority	

7. Comment below on possible solution to the problems you identified above?
